

# A STOPPER DEVICE FOR A BOTTLE, PROVIDED WITH MEANS OF RETAINING AND ATTACHING A CAST OR MOULDED SEAL, AND A METHOD FOR PRODUCING SAME

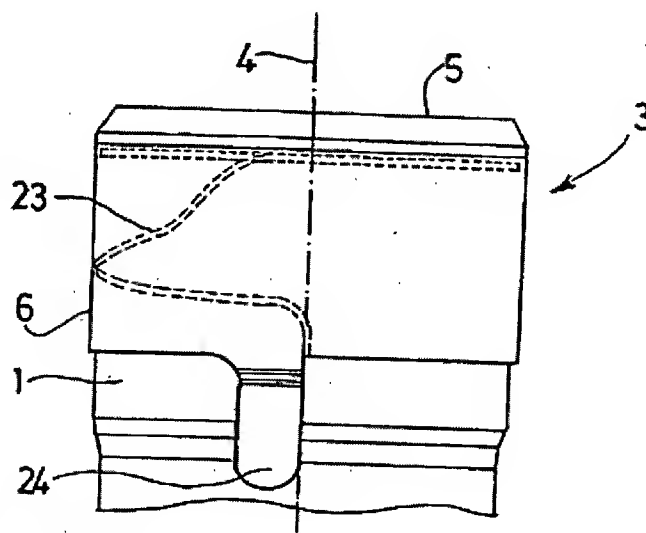
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## Abstract of CA2442213

The invention concerns a closure device for a carboy designed for a liquid dispenser of the water fountain type. The device comprises a cap (3) including a transverse wall (5) wherefrom projects an outer skirt (6). The transverse wall has, on its inner surface (29), an annular groove (30) coaxial with the cap, delimited by two ribs (31, 32) projecting from the transverse wall. The groove is designed to receive a cast or moulded joint (34), and to prevent the displacement thereof parallel to the transverse wall. The groove can also include on its inner surface means for catching said joint.



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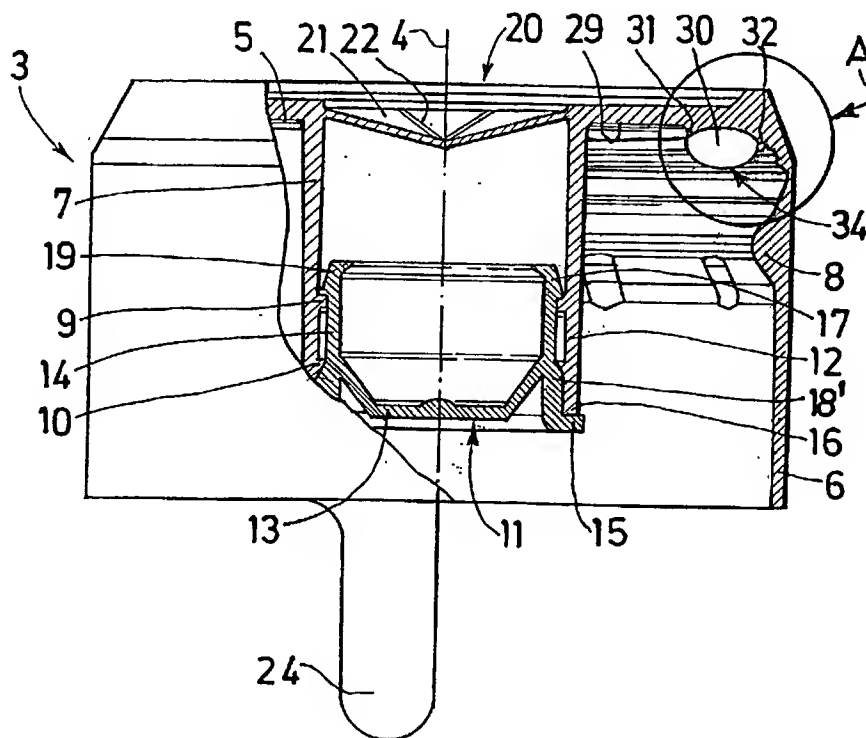
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(54) Titre : DISPOSITIF DE BOUCHAGE POUR UNE BONBONNE, MUNI DE MOYENS DE RETENUE ET D'ACCROCHAGE D'UN JOINT COULE OU MOULE, ET PROCEDE DE REALISATION

(54) Title: CLOSURE DEVICE FOR A CARBOY, PROVIDED WITH RETAINING AND CATCHING MEANS FOR A CAST OR MOULDED JOINT, AND METHOD FOR MAKING SAME



(57) Abrégé/Abstract:

The invention concerns a closure device for a carboy designed for a liquid dispenser of the water fountain type. The device comprises a cap (3) including a transverse wall (5) wherefrom projects an outer skirt (6). The transverse wall has, on its inner surface (29), an annular groove (30) coaxial with the cap, delimited by two ribs (31, 32) projecting from the transverse wall. The groove is designed to receive a cast or moulded joint (34), and to prevent the displacement thereof parallel to the transverse wall. The groove can also include on its inner surface means for catching said joint.

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A STOPPER DEVICE FOR A BOTTLE, PROVIDED  
WITH MEANS OF RETAINING AND ATTACHING A CAST OR  
MOULDED SEAL, AND A METHOD FOR PRODUCING SAME

5 The invention relates to a stopper device for a bottle comprising a neck provided with an external protrusion at its free end part and intended for a liquid dispenser of the "water fountain" type.

10 The dispensing of water by fountains, generally refrigerated, is a system which is very widespread in countries such as the United States of America and some Asiatic countries. The water to be dispensed is delivered in bottles with a content of five gallons (19/20 litres) which are placed upside down on the dispenser, the latter making it possible to dispense the water in smaller volumes,  
15 for example in glasses.

The invention relates more particularly to the stopper devices commonly referred to as "non-spill", that is to say which make it possible, by virtue of an internal valve system which frees a passage for the water out of the bottle  
20 only when the latter is in place on the dispenser, to place the bottle on the dispenser or to remove it from the dispenser, even before it is empty, without risk of spillage of the content of the bottle.

25 Such stopper devices are known, in particular through the document FR-A-2 769 004 issuing from the applicant.

A device of this type generally comprises a cap made from plastics material comprising a transverse end wall from which there project, in the same direction, firstly a substantially cylindrical external skirt provided with an  
30 internal protrusion for attachment behind the protrusion on

the neck of the bottle and secondly a substantially cylindrical internal shaft intended to receive a take-off cannula provided on the dispenser so as to come to fit in the shaft from the transverse end wall of the cap, when the  
5 bottle is put in place on the dispenser.

In addition, the device can comprise a tamper-evident cover moulded in one piece with the cap and situated at the start of the shaft, on the transverse wall side, so as to close off the shaft, the said cover being intended to be  
10 irretrievably and visibly destroyed when the take-off cannula is fitted in the shaft.

In order to ensure a good seal between the neck of the bottle and the stopper device mounted on the said neck, a seal is generally placed against the internal face of the transverse wall of the cap, between the external skirt and  
15 the shaft. The seal is intended to be compressed axially between the edge of the neck of the bottle and the transverse wall of the cap, when the stopper device is mounted on the said neck. Usually it is a foam seal, flat and discoid, at the centre of which is a hole enabling the  
20 shaft to pass.

Such a device is for example described in the document US 5 662 231.

Some devices of the prior art provide a projection on the  
25 internal face of the transverse wall of the cap, the said projection being intended to enter the seal when the stopper device is mounted on the neck and the seal is compressed. A projection of this type is in particular intended to prevent the relative movement of the seal with respect to the  
30 transverse wall of the cap. Reference can be made in particular to the documents US 5 687 865, US 4 874 023 and US 5 392 939.

However, such devices have a certain number of drawbacks:

5       - firstly, the projection does not always afford good holding of the seal against the transverse wall of the cap, the seal being able in particular to become detached from the said wall by moving axially towards the inside of the cap;

10       - secondly, there exists a high shear force at the area of contact between the projection and the seal, which may result in cracking or rupture of the seal and consequently a loss of impermeability. This problem is all the more frequent since the bottles are stacked one on top of the other on pallets, the pallets themselves being stacked, so that the bottles are subjected to high forces. The result is a degradation of the state of the seal during storage and  
15       transportation of the bottles.

The aim of the invention is to resolve these problems.

To this end, and according to a first aspect, the invention relates to a stopper device for a bottle comprising a neck provided with an external protrusion at its free end part and intended for a liquid dispenser of the water fountain type, the said device comprising a cap made from plastics material comprising a transverse end wall from which a substantially cylindrical external skirt projects, provided with an internal rim for attachment behind the rim on the  
20       neck of the bottle, in which the transverse wall has, on its internal face, an annular groove with its axis substantially merged with the axis of the said cap, delimited by two ribs projecting substantially perpendicular to the said transverse wall, the said groove being situated, when the  
25       device is mounted on the neck of the bottle, opposite the rim of the said neck, and being intended to receive a cast  
30

or moulded seal and to prevent the movement thereof parallel to the transverse wall.

According to a more elaborate version, the stopper device also comprises a substantially cylindrical internal shaft, projecting from the transverse end wall in the same direction as the external skirt so that the groove is situated between the skirt and the shaft, the said shaft being intended to receive a take-off cannula provided on the dispenser so as to come to fit in the shaft from the transverse end wall of the cap, when the bottle is placed on the dispenser, and a tamper-evident cover moulded in a single piece with the cap and situated at the beginning of the shaft, on the transverse wall side, so as to close off the shaft, the said cover being intended to be irremediably and visibly destroyed when the take-off cannula is fitted in the shaft.

According to other characteristics, the axial height of the ribs is less than the thickness of the joint when it is not compressed. The ends of the two ribs are offset axially with respect to each other. A first rib is situated axially, with respect to the axis of the cap, substantially two thirds of the way across the diameter of the said cap, a second rib being substantially at the same distance from the axis of the cap as the internal end of the internal protrusion on the skirt.

In addition, the groove comprises, on its internal face, at least one means of attaching the seal, thus preventing the movement of the said seal out of the groove.

In this way, the seal, fitted by casting and moulding, is held against the transverse wall both by a physico-chemical adhesion force and by the mechanical attachment means. In

addition the groove ensures holding of the seal in all directions parallel to the transverse wall of the cap.

5 The method for producing the seal (by casting or moulding) makes it possible for the mechanical attachment means to penetrate the constituent material of the said seal before it solidifies. Thus any risk of rupture of the seal following the force exerted by the attachment means is eliminated.

10 According to a first version of the invention, the groove comprises, on its internal face, at least one projection forming an attachment means for the said seal.

According to a first embodiment, at least one rib comprises a projection extending substantially radially towards the inside of the groove.

15 The axial height of the projection decreases from the rib as far as the end of the said projection, so as to form a spike able to penetrate the seal. The projection is situated towards the free end part of the rib.

20 For example, each of the two ribs comprises a projection extending substantially radially towards the inside of the groove.

According to a second embodiment, the bottom of the groove comprises at least one projection extending substantially axially towards the inside of the cap.

25 The projection comprises at least one face inclined by an acute angle with respect to the axis of the cap so that, when the seal is placed in the groove, at least one area of the said seal is included in attachment areas situated, axially, between the bottom of the groove and part of the  
30 said projection.

The projection has, in axial section, the form of at least one trapezium whose large face is situated towards the free end of the said projection. The said trapezium has an axis of symmetry substantially parallel to the axis of the cap.

- 5 The axial height of the projection is less than the axial height of the ribs.

According to one possible embodiment, the projection is annular, the axis of the said projection being substantially merged with the axis of the cap.

- 10 According to a second version of the invention, the internal face of the groove comprises localised reliefs such as serrations, roughnesses or equivalent, forming attachment means for the seal.

- 15 According to a second aspect, the invention relates to an assembly comprising a stopper device as previously described and a seal placed in the groove in the transverse wall of the said cap, the seal having been put in place by casting or moulding.

- 20 According to a third aspect, the invention relates to an assembly comprising a stopper device as previously described, a seal placed in the groove in the transverse wall of the said cap, the seal having been put in place by casting or moulding, and a bottle, the said bottle being empty or at least partially filled with a certain content.

- 25 When the cap is mounted on the neck of the bottle, the groove is situated opposite the rim of the said neck, the seal being compressed, in the groove, between the transverse wall of the cap and the rim of the neck of the bottle.

- 30 Finally, according to a fourth aspect, the invention relates to a method for producing a cap/seal assembly. According to



a first variant, the seal is cast in the groove in the cap, the said cap having previously been injection moulded. According to a second variant, the cap and seal are produced by bi-injection moulding.

5 The other characteristics of the invention result from the following description of embodiments, a description given with reference to the accompanying figures, in which:

- Figure 1 is an elevation view of a stopper device according to the invention, comprising a cap and mounted on  
10 the neck of a bottle;

- Figure 2 is a plan view of the device of Figure 1;

- Figure 3 is a partial axial section view of the device of Figure 1, showing a seal cast in a groove present inside the cap;

15 - Figure 4 is a detail view A of Figure 3, according to a first embodiment;

- Figure 5 is a detail view A of Figure 3, according to a second embodiment;

20 - Figure 6 is a view in section of the device mounted on the neck of the bottle, along the line B-B in Figure 2;

- Figure 7 is a view in section similar to Figure 6, showing the stopper device after fitting of the bottle on a dispenser;

25 - Figures 8 and 9 illustrate schematically a variant of the method for producing a cap provided with a seal, the said cap being depicted in partial axial section.

The stopper device as illustrated by the accompanying figures is intended for corking the neck 1 of bottles for a

water dispenser of the fountain type, bottles which generally have a content of five gallons (19/20 litres) and which are formed for example from polycarbonate.

As will be clear in Figures 6 and 7, the neck 1 has, at its free end, an external attachment protrusion 2.

The stopper device comprises a cap 3 of axis 4, comprising a transverse end wall 5 from which there project in the same direction firstly an essentially cylindrical external skirt 6 and secondly an internal shaft 7 also essentially cylindrical in shape, the axial height of the shaft 7 here being less than the axial height of the skirt 6.

The skirt 6 comprises an internal protrusion 8, for example divided up into several sectors, intended to cooperate with the external protrusion 2 on the neck 1 with a view to holding the cap 3 on the neck 1, by mutual snapping-on.

The shaft 7 comprises, on its internal face, two annular reliefs 9, 10 whose function will be detailed below.

A stopper 11 in the shape of a cup is fitted in the free end part 12, that is to say opposite to the transverse wall 5, of the shaft 7. The stopper 11 comprises essentially a bottom 13, situated towards the free end 16 of the shaft 7, a substantially cylindrical wall 14, projecting with respect to the bottom 13, and an external annular rim 15 provided towards the bottom 12 in order to bear against the free end 16 of the shaft 7 when the stopper 11 fits in the shaft 7 (see Figures 3 and 6).

The stopper 11 also comprises:

- on the external face of its cylindrical wall 14, a first annular projection 17 intended to cooperate with the

first annular relief 9 on the shaft 7 when the bottle is not fitted on the dispenser;

- on the external face of its cylindrical wall 14, a second annular projection 18 or a shoulder 18' intended to cooperate with the second annular relief 10 on the shaft 7 when the bottle is not fitted on the dispenser;

- towards the free end of its cylindrical wall 14, an internal rim 19, whose function will emerge from the description of Figure 7.

At the beginning of the shaft 7, on the transverse wall 5 side, the shaft 7 is closed off by a cover 20 which is moulded in a single piece with the cap 3, in the form of a rupture diaphragm consisting of eight petals 21 in the form of sectors of a circle, connected together by tearing lines 22 in the form of radii. The cover 20 preferably has a slightly conical shape, the tip of the cone being turned towards the stopper 11.

The diameter and axial height of the shaft 7 are chosen so that, when the stopper 11 is fully home in the shaft 7, its internal rim 15 being in contact with the free end 16 of the shaft 7, the internal rim 19 at the free end of the cylindrical wall 14 of the stopper 11 is separated from the cover 20 by a distance corresponding at least to the radius of the shaft 7, and therefore substantially to the length of the petals 21.

The skirt 6 has internally a tear line 23 (a weakened line) which extends from the free end of the skirt 6, across the internal protrusion 8 interrupted at this point, as far as between the protrusion 8 on the skirt 6 and the transverse wall 5, substantially as far as a point in line with the top of the external protrusion 2 on the neck 1 of the bottle. A

gripping lug 24 provided on the skirt 6 makes it possible to tear off the latter, that is to say to tear the cap 3 along the tear line 23, which means that the remaining cap no longer holds on the neck 1 of the bottle.

- 5 The fitting of the bottle provided with the cap 3 on a dispenser will now be described with reference to Figure 7 as well as the removal of the bottle from the dispenser and the filling of the said bottle.

10 Figure 7 depicts the bottle filled with water, closed off by the cap 3, after it is fitted in the inverted position on a dispenser, only the drawing-off cannula 25 of which has been shown since this is the only part of the dispenser which cooperates with the stopper device which is the object of the present invention.

- 15 The drawing-off cannula 25 has a substantially cylindrical body comprising at least one drawing off hole 26 intended for the passage of the liquid from the inside of the bottle to the outside of the dispenser.

20 When the bottle is fitted on the dispenser, in the inverted position, the head 27 (the top end) of the drawing-off cannula 25 causes first of all the rupture of the cover 20 at the tearing lines 22, that is to say a subdivision of the cover 20 into eight petals 21 which, remaining attached by their base to the shaft 7, are folded upwards by the head 27  
25 of the cannula 25. The head 27 of the cannula 25 then penetrates the stopper 11, the internal rim 19 of which comes to snap into a groove 28 provided between the head 27 and the body of the cannula 25. Next the cannula 25, driving the stopper 11, pushes the latter upwards out of the  
30 shaft 7, freeing the first annular projection 17 from the first annular relief 9 and the second annular projection 18 - or the shoulder 18' - from the second annular relief 10.

The water contained in the bottle can thus flow through the drawing-off holes 26 in the cannula 25, and supply the dispenser.

5 When the bottle is raised in order to be removed from the dispenser, whether it be empty or still contain water, the drawing-off cannula 25 on which the stopper 11 remains snapped, once again nests the stopper 11 in the free end of the shaft 7, until the external rim 15 comes to abut against the free end 16 of the shaft 7, the projections 17, 18 also  
10 cooperating with the reliefs 9, 10. Thus the stopper 11, fully nested in the shaft 7, is detached from the cannula 25, once again providing sealed closure of the bottle.

In order to once again fill the bottle from the original source, the skirt 6 is pulled off along the tear line 23 of the cap 3 by traction exerted on the lug 24, the cap 3 then  
15 being able to be removed by hand without effort, being no longer held on the neck 1 of the bottle. After refilling of the bottle, a new stopper device whose cover 20 and skirt 6 are intact are placed on the neck 1, which is a guarantee of the origin of the content of the bottle (a double function  
20 of tamper evidence).

According to an embodiment which is not shown, the stopper device according to the invention can be provided with a third tamper-evident means consisting of a circumferential  
25 tamper-evident ring or strip connected to the free end of the skirt by breakable means, for example a weakened line or discrete bridges, the ring being engaged behind a second external protrusion provided on the neck 1 of the bottle, at a distance below the top protrusion 2. The tamper-evident  
30 ring or guarantee can be of any type or consist of a heat-shrinking ring whose shrinking is produced when the cap 3 is put in place, following the filling. This guarantee ring

supplements the two tamper-evident or guarantee means consisting of the cap 20 and the tear-off skirt 6.

It should be noted that the stopper device according to the invention can be used without a stopper 11. This is because  
5 the cover 20, as long as it is not destroyed by the drawing-off cannula 25, not only constitutes a means of guarantee or tamper-evidence, but also provides sealed closure of the cap 3. Naturally, in the absence of the stopper 1, the cap  
3 does not prevent the flow of water out of the bottle,  
10 which would be removed from the dispenser before being completely empty.

The sealing means provided in the cap 3 are now described with reference to Figures 3 to 5.

The internal face 29 of the transverse wall 5 has an annular  
15 groove 30 with its axis substantially merged with the axis 4 of the cap 3.

The groove 30 is delimited by a first rib 31, situated axially, with respect to the axis 4 of the cap 3, substantially two-thirds of the way across the diameter of  
20 the said cap 3, or substantially half-way between the shaft 7 and the external skirt 6, and by a second rib 32, situated towards the periphery of the transverse wall 5, substantially at the same distance from the axis 4 of the cap 3 as the internal end of the internal protrusion 8 on  
25 the skirt 6, the said ribs 31, 32 projecting substantially perpendicularly to the transverse wall 5.

Thus the groove 28 is situated, when the cap 3 is mounted on the neck 1 of the bottle, opposite the rim 33 of the neck 1.

The groove 30 is intended to receive an O-ring seal 34, put  
30 in place by casting or moulding, as depicted in Figure 3. When the cap 3 is mounted on the neck 1 of the bottle, the

seal is compressed, in the groove 30, between the rim 33 of the neck 1 and the transverse wall 5 of the cap 3.

5 The axial height of the ribs 31, 32 is less than the thickness of the seal 34 when it is not compressed, but is sufficient to hold the seal 34 inside the groove 30. It will be understood that the axial height of the ribs 31, 32 is adjusted so as to enable the seal 34 to provide a very good seal between the cap 3 and the neck 1 when the cap 3 is mounted on the neck 1 of the bottle.

10 According to one possible embodiment, the ends of the two ribs 31, 32 are offset axially with respect to each other.

The groove 30 prevents movements of the seal 34 parallel to the transverse wall 5, the seal 34 being held between the ribs 31, 32.

15 In order to improve the holding of the seal 34 in the groove 30, and in particular to prevent it escaping from the said groove 30 by an axial movement moving away from the transverse wall 5, the groove 30 is provided with projections intended to penetrate the material of the seal  
20 34, when the latter is cast or moulded, so as to form a means of attachment of the said seal 34. The projections are manufactured, by moulding, at the same time as the cap 3.

25 According to a first embodiment, illustrated by Figure 4, each of the two ribs 31, 32 comprises an annular projection 35 with its axis substantially merged with the axis 4 of the cap 3, extending radially towards the inside of the groove 30. The invention also provides an embodiment in which the projections 35 form an acute angle with the ribs 31, 32.  
30 The projections 35 are each situated towards the free end part of a rib 31, 32.

The axial height of each of the projections 35 decreases from the rib 31, 32 as far as the end of the projection 35, so as to form a spike able to penetrate the seal 34.

5 According to a second embodiment, illustrated by Figure 5, the bottom 36 of the groove 30, substantially merged with the transverse wall 5 of the cap 3, comprises a projection 37 directed towards the inside of the groove 30, substantially axially.

10 The projection 37 has, in axial section, the form of a trapezium, or rather of two trapezia symmetrical with respect to the axis 4 of the cap 3.

15 The small base 38 of the trapezium is substantially merged with the bottom 36 of the groove 30, the large base 39 of the trapezium constituting the free end of the projection 37. The trapezium has an axis of symmetry 40 substantially parallel to the axis 4 of the cap 3.

20 The faces of the trapezium distinct from the bases 38, 39 are inclined with respect to the bottom 36 of the groove 30 by an acute angle, for example of between  $40^\circ$  and  $80^\circ$ , in particular close to  $60^\circ$ . The axial height of the projection 37 is less than that of the ribs 31, 32.

25 According to an embodiment which is not shown, the projection 37 has, in axial section, the shape of a trapezium whose large base is substantially merged with the bottom 36 of the groove 30, the small base of the trapezium constituting the free end of the projection 37. The small base can be very short, so that the trapezium is similar to a triangle. At least one face of the trapezium, distinct from the bases, is inclined with respect to the bottom 36 of the groove 30 by an acute angle, for example between  $40^\circ$  and  $80^\circ$ , in particular around  $60^\circ$ .

30



According to another possible embodiment of the invention, the internal face of the groove 30 is provided with localised reliefs forming means of mechanical attachment of the seal 34.

- 5 For example, the internal face of the groove 30 comprises serrations, scales, roughnesses formed by electroerosion, or equivalent. The invention also makes provision for creating inside the groove 30 a rough or granite surface state.

10 In the case of casting, the seal 34 is put in place by depositing a certain volume of material at the bottom of the groove 30, the cap 3 previously having been injection moulded. This deposition can be effected using an extruder or a "hot melt" gun. The material constituting the seal 34, hot and liquid, or at least viscous, spreads over the bottom 36 of the  
15 groove 30 and coats and covers the projections 35, 37.

The seal 34 is generally allowed to adopt its natural geometric shape, which results in a curved surface, as illustrated in Figure 3.

20 The configuration of the projections 35, 37 is such that there exists a zone 41 - referred to as the attachment zone - lying axially between the bottom 36 of the groove 30 and the said projection 35, 37. Some of the material deposited at the bottom of the stopper and flowing against the bottom 36 of the groove 30 comes to be positioned in the attachment  
25 zone 41.

Thus, in addition to the physico-chemical adhesion of the seal 34 cast on the bottom 36 of the groove wall 30, there exists, because of the presence of the projections 35, 37 or of the reliefs on the internal face of the groove 30, a  
30 mechanical attachment of the said seal 34, once solidified,

which prevents it from becoming disconnected from the said groove 30.

Consequently, despite the stacking of bottles on top of one another and the forces which result from this at the seal 34, the latter is held in position against the transverse wall 5, both parallel and perpendicular to it, by virtue of the groove 30 and the projections 35, 37, without risk of rupture of the seal 34.

Reference is now made to Figures 8 and 9, which illustrate a second variant embodiment of the assembly consisting of cap 3 and seal 34, by bi-injection moulding. It should be noted that the figures are simplified, the ribs 31, 32 and the projections 35, 37 not appearing.

The seal 34 is first of all injected, between a first mould part 42 and a core 43 which define the shape of the said seal 34 (Figure 8). The join between the first mould part 42 and the core 43 is sealed.

After a cooling time for the seal 34, the cap 3 is injected between a second mould part 44 and the core 43, so as to overmould the seal 34 (Figure 9). The projections 35, 37 are thus moulded inside the seal 34, which provides a good attachment of the said seal 34. The cap 3 is for example produced from high-density polyethylene (HDPE).

After a cooling time, the assembly consisting of cap 3 and seal 34 is ejected from the mould.

In a variant embodiment, the first and second parts 42, 44 of the mould have the same internal profile so that, at the end of the cooling of the seal 34 previously cast, it suffices, without opening the mould, to move the said first or second part 42, 44 with respect to the core 43, so as to define a housing in which the cap 3 will be cast.

Finally, the invention provides for a simplified stopper device (not shown), provided with the groove 30 and a cast or moulded seal 34, in which the cap 3 comprises neither shaft 7 nor stopper 11 nor cover 20, but only a skirt 6  
5 provided with a tearing line 23, one end of which is situated between the protrusion 8 and the transverse wall 5, so as to enable the user to remove the cap from the neck of the bottle by acting on the lug 24.

This simplified version of a bottle can be fitted on a  
10 dispenser without a cannula, very rapidly, so as to prevent any spraying of water. On the other hand, if the bottle is removed from the dispenser before being completely empty, the seal is no longer ensured.

## CLAIMS

1. A stopper device for a bottle comprising a neck (1) provided with an external protrusion (2) at its free end part and intended for a liquid dispenser of the water fountain type, the said device comprising a cap (3) made from plastics material comprising a transverse end wall (5) from which a substantially cylindrical external skirt (6) projects, provided with an internal rim (8) for attachment behind the rim (2) on the neck (1) of the bottle, characterised in that the transverse wall (5) has, on its internal face (29), an annular groove (30) with its axis substantially merged with the axis (4) of the said cap (3), delimited by two ribs (31, 32) projecting substantially perpendicular to the said transverse wall (5), the said groove (30) being situated, when the device is mounted on the neck (1) of the bottle, opposite the rim (33) of the said neck (1), and being intended to receive a cast or moulded seal (34) and to prevent the movement thereof parallel to the transverse wall (5).

2. A stopper device according to Claim 1, characterised in that it also comprises a substantially cylindrical internal shaft (7), projecting from the transverse end wall (5) in the same direction as the external skirt (6) so that the groove (30) is situated between the skirt (6) and the shaft (7), the said shaft (7) being intended to receive a take-off cannula (25) provided on the dispenser so as to come to fit in the shaft (7) from the transverse end wall (5) of the cap (3), when the bottle is placed on the dispenser, and in that it comprises a tamper-evident cover (20) moulded in a single piece with the cap (3) and situated at the beginning of the shaft (7), on the transverse wall (5) side, so as to close off the shaft (7), the said cover (20) being intended to be

irremediably and visibly destroyed when the take-off cannula (25) is fitted in the shaft (7).

3. A stopper device according to Claim 1 or 2, characterised in that the axial height of the ribs (31, 32) is less than the thickness of the seal (34) when it is not compressed.

4. A stopper device according to any one of Claims 1 to 3, characterised in that the ends of the two ribs (31, 32) are offset axially with respect to each other.

5. A stopper device according to any one of Claims 1 to 4, characterised in that a first rib (31) is situated axially, with respect to the axis of the cap (3), substantially two thirds of the way across the diameter of the said cap (3), a second rib (32) being situated substantially at the same distance from the axis (4) of the cap (3) as the internal end of the internal protrusion (8) on the skirt (6).

6. A stopper device according to any one of Claims 1 to 5, characterised in that the groove (30) comprises, on its internal face, at least one means of attaching the said seal (34), thus preventing the movement of the seal (34) out of the groove (30).

7. A stopper device according to Claim 6, characterised in that the groove (30) comprises, on its internal face, at least one projection (35, 37) forming an attachment means for the said seal (34).

8. A stopper device according to Claim 7, characterised in that at least one rib (31, 32) comprises a projection (35) extending substantially radially towards the inside of the groove (30).

9. A stopper device according to Claim 8, characterised in that the axial height of the projection (35) decreases from the rib (31, 32) as far as the end of the said projection (35), so as to form a spike able to penetrate the seal (34).

5 10. A stopper device according to any one of Claims 7 to 9, characterised in that the projection (35) is situated towards the free end part of the rib (31, 32).

10 11. A stopper device according to any one of Claims 7 to 10, characterised in that each of the two ribs (31, 32) comprises a projection (35) extending substantially radially towards the inside of the groove (30).

15 12. A stopper device according to Claim 7, characterised in that the bottom (36) of the groove (30) comprises at least one projection (37) extending substantially axially towards the inside of the cap (3).

20 13. A stopper device according to Claim 12, characterised in that the projection (37) comprises at least one face inclined by an acute angle with respect to the axis (4) of the cap (3) so that, when the seal (34) is placed in the groove (30), at least one area of the said seal (34) is included in an attachment area (41) situated, axially, between the bottom (36) of the groove (30) and part of the said projection (37).

25 14. A stopper device according to Claim 12 or 13, characterised in that the projection (37) has, in axial section, the shape of at least one trapezium whose large base is situated towards the free end of the said projection (37).

30 15. A stopper device according to Claim 14, characterised in that the said trapezium has an axis of symmetry (40) substantially parallel to the axis (4) of the cap (3).

16. A stopper device according to any one of Claims 12 to 15, characterised in that the axial height of the projection (37) is less than the axial height of the ribs (31, 32).

5 17. A stopper device according to any one of Claims 7 to 16, characterised in that the projection (35, 37) is annular, the axis of the said projection (35, 37) being substantially merged with the axis (4) of the cap (3).

10 18. A stopper device according to Claim 6, characterised in that the internal face of the groove (30) comprises localised reliefs such as serrations, roughnesses or equivalent, forming an attachment means for the said seal (34).

15 19. An assembly comprising a stopper device according to any one of Claims 1 to 18 and a seal (34) placed in the groove (30) in the transverse wall (5) of the said cap (3), the seal (34) being put in place by casting or moulding.

20 20. An assembly comprising a stopper device according to any one of Claims 1 to 18, a seal (34) placed in the groove (30) in the transverse wall (5) of the said cap (3), the seal (34) having been put in place by casting or moulding, and a bottle, the said bottle being empty or at least partially filled with a certain content.

25 21. An assembly according to Claim 20, characterised in that, when the cap (3) is mounted on the neck (1) of the bottle, the groove (30) is situated opposite the rim (33) of the said neck (1), the seal (34) being compressed, in the groove (30), between the transverse wall (5) of the cap (3) and the rim (33) of the neck (1) of the bottle.

30 22. A method for producing an assembly according to Claim 19, characterised in that the seal (34) is cast in the

groove (30) in the cap (3), the said cap (3) having previously been injection moulded.

23. A method for producing an assembly according to Claim 19, characterised in that the cap (3) and the seal (34) are  
5 produced by bi-injection moulding.



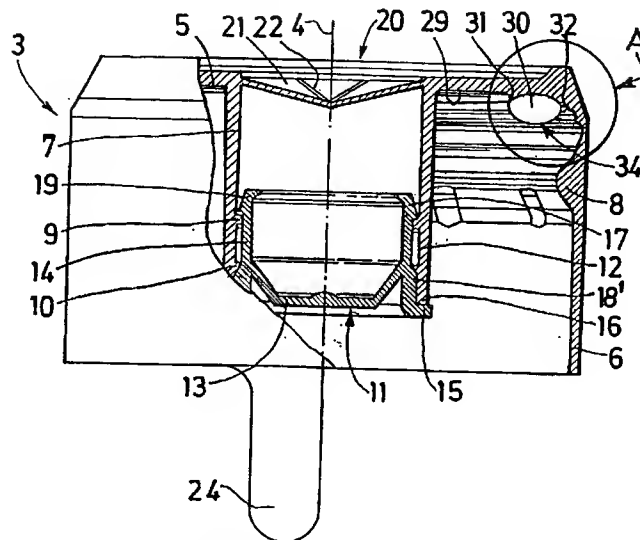
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[Suite sur la page suivante]

(54) Title: CLOSURE DEVICE FOR A CARBOY, PROVIDED WITH RETAINING AND CATCHING MEANS FOR A CAST  
OR MOULDED JOINT, AND METHOD FOR MAKING SAME(54) Titre : DISPOSITIF DE BOUCHAGE POUR UNE BONBONNE, MUNI DE MOYENS DE RETENUE ET D'ACCRO-  
CHAGE D'UN JOINT COULE OU MOULE, ET PROCÉDE DE RÉALISATION

(57) Abstract: The invention concerns a closure device for a carboy designed for a liquid dispenser of the water fountain type. The device comprises a cap (3) including a transverse wall (5) wherefrom projects an outer skirt (6). The transverse wall has, on its inner surface (29), an annular groove (30) coaxial with the cap, delimited by two ribs (31, 32) projecting from the transverse wall. The groove is designed to receive a cast or moulded joint (34), and to prevent the displacement thereof parallel to the transverse wall. The groove can also include on its inner surface means for catching said joint.

[Suite sur la page suivante]

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*En ce qui concerne les codes à deux lettres et autres abréviations, se référer aux "Notes explicatives relatives aux codes et abréviations" figurant au début de chaque numéro ordinaire de la Gazette du PCT.*

**Déclaration en vertu de la règle 4.17 :**

— relative à la qualité d'inventeur (règle 4.17.iv) pour US seulement

(57) **Abrégé :** L'invention concerne un dispositif de bouchage pour une bonbonne destinée à un distributeur de liquide du type "fontaine à eau". Le dispositif comprend une capsule (3) comportant une paroi transversale (5) de laquelle fait saillie une jupe extérieure (6). La paroi transversale présente, sur sa face intérieure (29), une gorge annulaire (30) de même axe que la capsule, délimitée par deux nervures (31, 32) faisant saillie de la paroi transversale. La gorge est destinée à recevoir un joint (34) coulé ou moulé, et à empêcher le déplacement de celui-ci parallèlement à la paroi transversale. La gorge peut également comprendre sur sa face intérieure des moyens d'accrochage du dit joint.



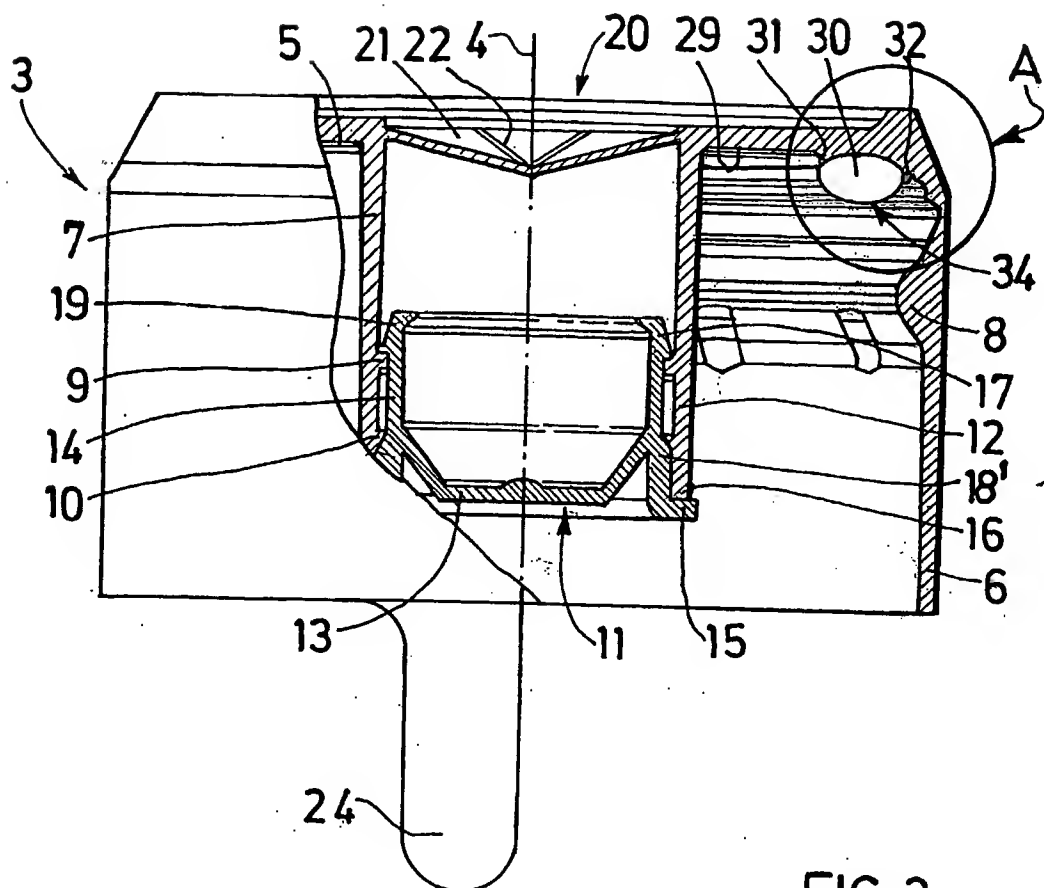


FIG. 3

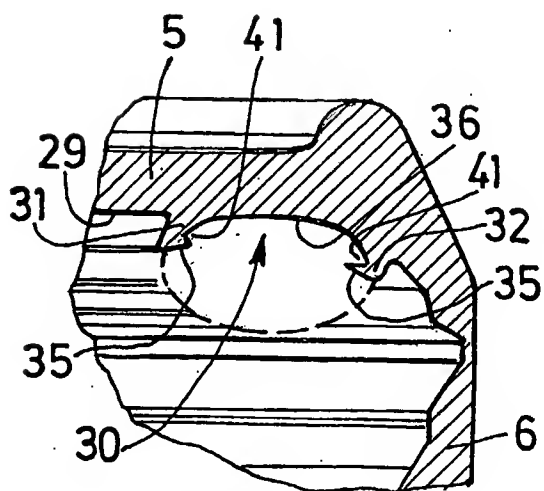


FIG. 4

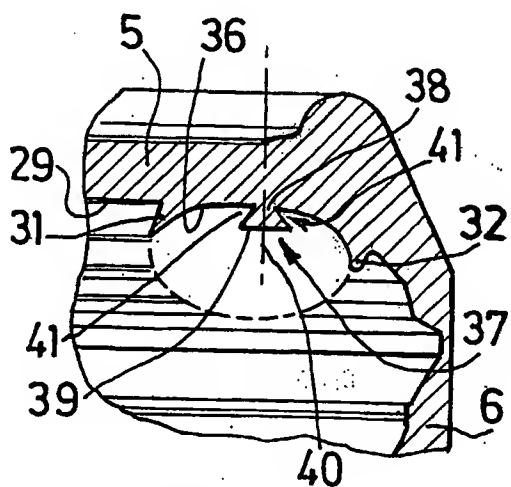
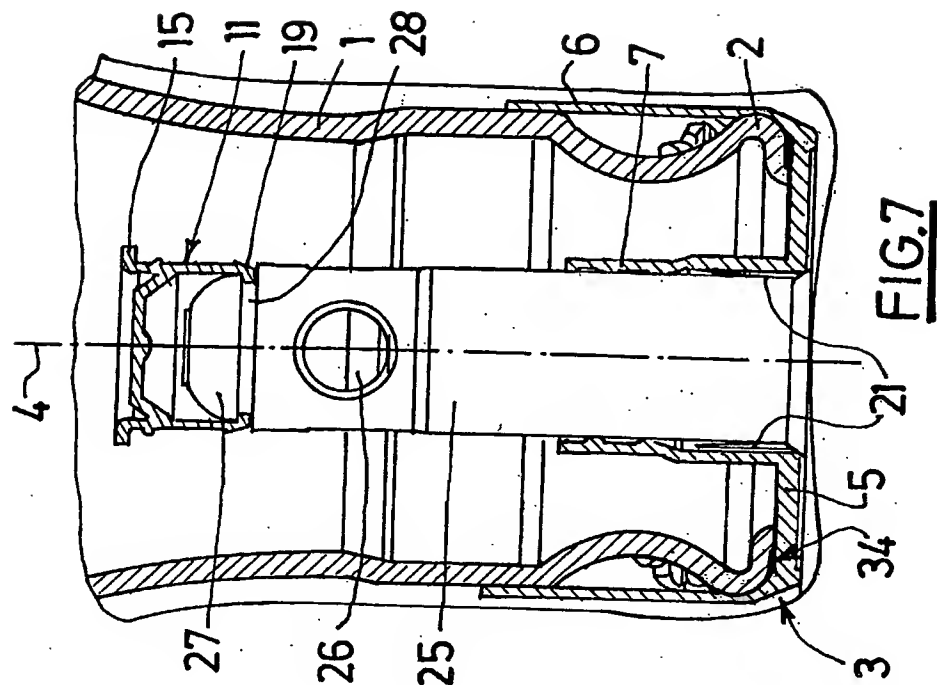
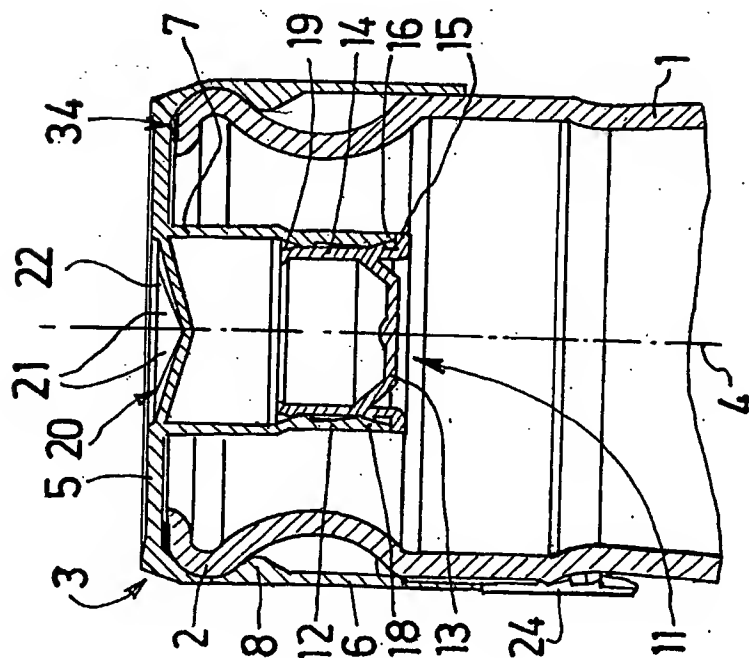


FIG. 5



**FIG. 7**



**FIG. 6**

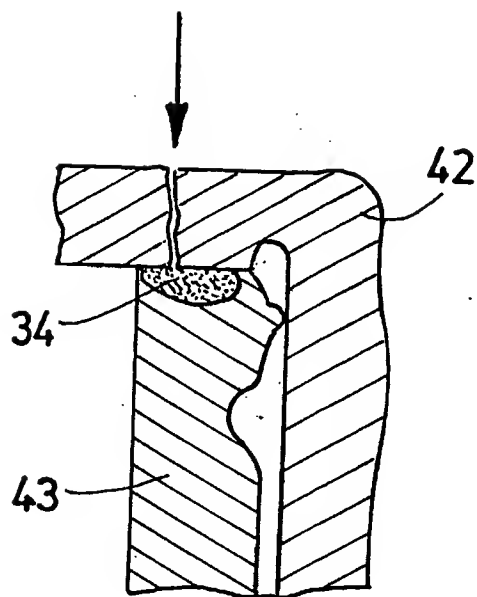


FIG. 8

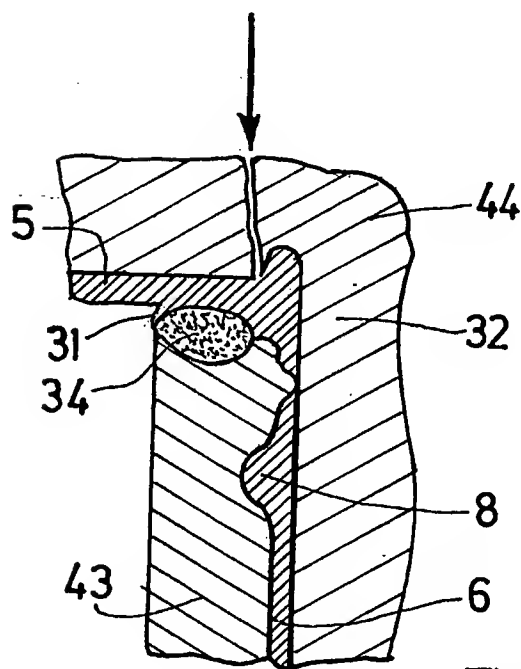


FIG. 9

